

## Appreciation of authenticity promotes curiosity: implications for object-based learning in museums

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### About the author

Louise Bunce is a Senior Lecturer in Psychology at The University of Winchester. She has conducted research in the field of developmental and educational psychology for over 10 years. This research has mainly explored children's understanding of what is "real" and the impact of engaging in fantasy on development. She would be delighted to hear from museum professionals regarding their experiences that relate to this research, as well as any attempts to improve visitor understanding of authenticity.

## Appreciation of authenticity promotes curiosity: implications for object-based learning in museums

**Abstract** Museum professionals suppose that interacting with authentic objects promotes curiosity and engagement, but this has not been tested. In this research, children and adults visiting the Oxford University Museum of Natural History were shown a taxidermied rabbit or rabbit skeleton. They were asked “Is it real?”, “Why?” and were given the opportunity to ask a question about it to measure their curiosity and engagement. As predicted, visitors who perceived the rabbits as authentic were more likely to ask a question than those who judged them as inauthentic. Perceived authenticity also promoted more why questions. In general, these findings became more robust with increasing age. However, approximately 25% of visitors did not perceive the rabbits as authentic. This study thus supports the assumption that authentic objects are associated with increased curiosity and engagement but museum professionals need to ensure that visitors know when they are interacting with the real thing.

Keywords: authenticity, object-based learning, natural history, taxidermy, education, museums

### Does authenticity matter?

Objects of natural history can be considered authentic by virtue of their origin in nature as opposed to arising from an intentional manufacturing process<sup>1</sup>. On the other hand, artefacts that can be considered authentic are defined as being original (as opposed to being a replica or fake) and usually have some unique or historic link to a person, event or place<sup>2</sup>. Museum professionals hold that face-to-face experiences with authentic objects engender awe-inspiring reactions and promote a “visceral connection” with the beholder<sup>3</sup>. In turn, this is believed to create an aesthetic experience that is unique to a museum visit<sup>4</sup>. Physical encounters with authentic museum objects are also thought to promote curiosity and critical engagement beyond that offered by replicas or digital recreations<sup>5</sup>. Failure to appreciate authenticity may, therefore, undermine not only the aesthetic value of museum visits but also interfere with potential educational gains. Yet, it is surprising that no

empirical research has been carried out to test this widely held view. The aim of the current study was to explore museum visitors' perceptions of the authenticity of objects of natural history (biofacts) and their level of curiosity about them, as indicated by whether they asked a question and the type of question they asked. The results of this investigation will be of both theoretical interest and have practical implications for enhancing learning opportunities in museums.

### **Rationale for using questions as a measure of curiosity and engagement**

Children are capable of asking complex why questions from a very young age<sup>6</sup> and their questions speak to the characteristics of objects that they consider to be conceptually important<sup>7</sup>. Young children are also capable of seeking explanatory information to understand how the physical and social world works<sup>8</sup>. Given that our ability to ask questions begins in early childhood, the current study analysed children and adult visitors' questions about museum objects as a measure of curiosity and engagement. In addition, the study took into account their perception of the authenticity of the object<sup>9</sup> by asking them if it was real or not and why. The aim was to examine whether engagement with an authentic object, as evaluated by the visitor, affected whether they asked a question. The nature of visitors questions were further analysed to determine whether engagement with an authentic object resulted in asking more explanatory questions compared to fact-seeking questions.

### **Overview of the study and predictions**

In this research, children and adult visitors to the Oxford University Museum of Natural History took part in interviews to assess their understanding of either a taxidermied rabbit or a rabbit skeleton. The taxidermied rabbit was presented as a touchable object for one group of visitors and inside an exhibition case for another group of visitors to reflect the two ways in which taxidermy is curated in museums. The rabbit skeleton was only presented inside an exhibition case because it was too fragile to handle.

The first hypothesis was that more visitors would ask questions if they perceived the taxidermied rabbit or skeleton rabbit as authentic compared to visitors who did not perceive it as authentic. The second hypothesis was that the questions asked by visitors who

perceived the objects as authentic would seek more explanatory information than visitors who perceived the objects as inauthentic.

In addition, another group of visitors was presented with the taxidermied rabbit in a novel way. This involved showing visitors the taxidermied rabbit alongside a realistic soft toy rabbit because previous research has found that presenting authentic and non-authentic objects in pairs helps children understand authenticity<sup>10</sup>. The hypothesis was that visitors in this condition would ask more questions about the taxidermied rabbit than the toy rabbit because the taxidermied rabbit would be perceived as authentic and the toy rabbit would not be perceived as authentic.

Finally, to find out how questions about taxidermy and skeletons might change over the course of development, we included groups of children aged 4-5 years old, 6-7 years old and 8-10 years old, as well as adults.

### **Who took part?**

The study took place in the main forecourt of the Oxford University Museum of Natural History during weekends and school holidays. In total, 302 visitors participated. There were 86 children aged 4-5 years, 88 children aged 6-7 years, 82 children aged 8-10 years and 46 adults. Approximately half of the participants were female (52%,  $n = 156$ ). For 25% of participants, this was their first visit to a natural history museum, whereas 44% had visited once or twice before and the rest (31%) had visited more than twice. Most of the visitors were White (261, 86%) and held a university level qualification (188, 62%) (in the case of children, this was measured with respect to their main caregiver).

### **Procedure**

Visitors who approached the table where the research was taking place were informed about the study and invited to participate (if a child approached the table they were requested to ask their accompanying adult to speak to the researcher). After giving informed consent, visitors sat at the table with the researcher to answer questions about an *Oryctolagus cuniculus* (rabbit). The rabbit was presented in one of four different conditions

and visitors only took part in one of the conditions. The conditions were: 1) taxidermied rabbit inside an exhibition case, 2) touchable taxidermied rabbit (not inside a case), 3) a rabbit skeleton inside an exhibition case, or 4) touchable taxidermy presented alongside a realistic soft toy rabbit (see Figure 1). A rabbit was chosen because it is a common animal in the UK that was likely to be familiar to visitors and because the museum owned a taxidermied rabbit and rabbit skeleton that could be used for the study.



Figure 1: Taxidermied rabbit (left), rabbit skeleton (centre) and toy rabbit (right)

The interview began with warm-up questions about the rabbit including asking them to name it. Most participants correctly named the taxidermied version as a rabbit (or hare) but 41/74 (55%) thought that the rabbit skeleton was a dinosaur and only 7 (10%) participants accurately named it as a rabbit. If they named it incorrectly, they were informed that it was a rabbit. Subsequently, participants were asked whether they thought that the rabbit was real and why, and whether they wanted to ask the researcher a question about it. When the taxidermied rabbit was presented alongside a toy rabbit, these questions were asked about both the taxidermied rabbit and toy rabbit in a random order. Finally, participants were asked a series of questions about the properties of the rabbits; these data are reported elsewhere<sup>11</sup>.

### **How did visitors interpret and respond to the rabbits?**

Data from 130 participating visitors were excluded either because they did not say that it was real on the basis of authenticity (they said it was real or not real on the basis of

whether it was alive or dead,  $n = 116$ ), or because they indicated that they wanted to ask a question, but then failed to produce a question ( $n = 14$ ). Remaining data from 172 participants who said both that the rabbit was authentic<sup>12</sup> and asked a question was analysed. There were 26 in condition 1 (taxidermy inside an exhibition case), 38 in condition 2 (touchable taxidermy), 60 in condition 3 (skeleton inside an exhibition case) and 48 in condition 4 (taxidermy with a toy). In the following analysis, data relating to the toy condition refers only to participants' responses to the taxidermied rabbit - data from the toy rabbit are considered separately.

Overall, 52% (89/172) of participants asked a question. This number was similar in each of the four conditions, but was highest in the touchable taxidermy and skeleton conditions (55% in each) and lowest in the taxidermy encased condition (46%).

Three quarters of participants (76%, 131/172) said that the rabbits were authentic but this varied depending on the condition. More participants said that the rabbit was authentic in the toy, skeleton and taxidermy encased conditions (85%, 78% and 77% respectively) and slightly fewer participants said it was authentic in the touchable taxidermy condition (61%).

The key issue was whether participants who judged the rabbits as authentic would be more likely to ask a question than those who did not judge the rabbits as authentic. The data supported this prediction: more participants (76, 58%) asked a question if they judged the rabbit as authentic compared to only 13 (32%) participants who asked a question if they did not judge the rabbit as authentic (see Figure 2)<sup>13</sup>. This pattern was most evident in the touchable taxidermy condition.

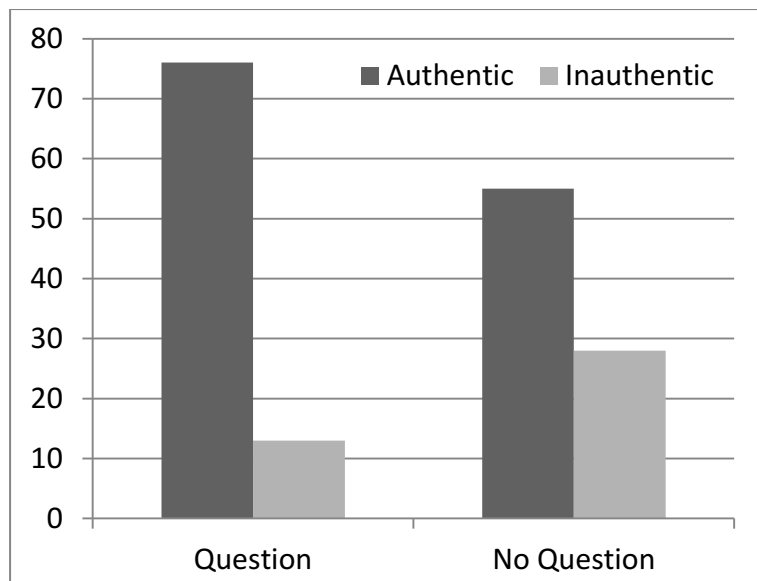


Figure 2: Number of participants who asked a question according to judgment of authenticity

Furthermore, in the toy condition, the soft toy rabbit was perceived as inauthentic by all participants and only 3 (6%) participants asked a question about it. In contrast, 23 (48%) participants asked a question about the taxidermied rabbit when it was presented alongside the toy. This supported the hypothesis that more questions would be asked about the taxidermied rabbit than the toy rabbit when they were presented together because the taxidermied rabbit was perceived as authentic.

### Types of questions that participants asked

Next, participants' questions concerning the taxidermy and skeleton rabbits were analysed to determine whether they sought facts (typically questions that required one word answers) or explanations (typically "why" questions). Figure 3 shows that facts were sought by 62 (70%) participants and explanations were sought by 27 (30%) participants. As predicted, questions seeking explanations were asked more often by participants who judged the rabbit as authentic (81%) than those who did not (19%).

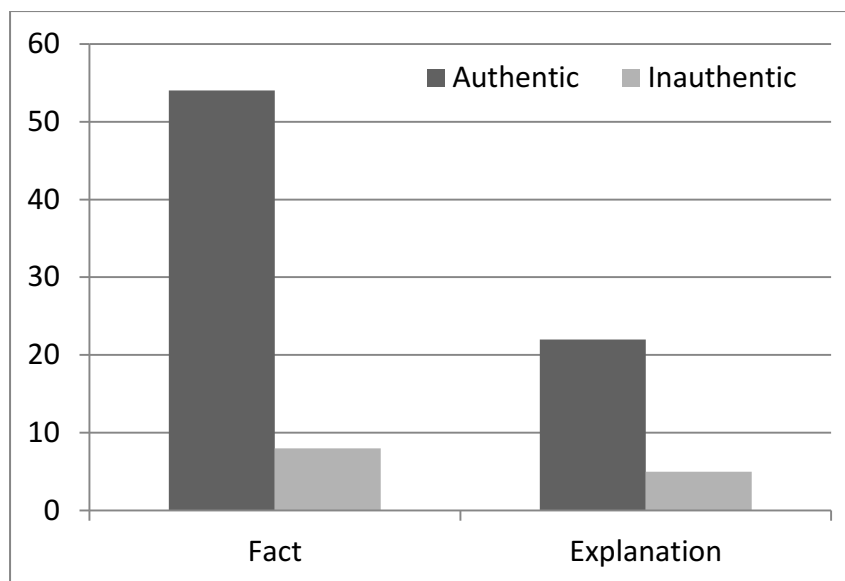


Figure 3: Number of fact and explanation questions according to participants' judgment of authenticity

The questions were subsequently categorised to determine what types of facts or explanations participants sought. Questions were grouped into categories that emerged from the data and these are explained with examples in Table 1.

Table 1: Example questions, in order of frequency, according to each category of question and whether the question sought facts or explanations (number in brackets refers to age of participant)

| Question type | %  | Definition   | Fact  | Explanation   |
|---------------|----|--|---|---|
| Features      | 38 | Seeks information about specific features of the animal, usually visible / physical ones, but also questions about internal organs | How big is its brain? (6)<br>How many claws does it have? (8)<br>What colour was it? (8)<br>Does it have bones in its ears? (adult) | Why does it have claws? (4)<br>Why does it have so big eyes? (6)<br>Why do rabbits have such long ears? (7) |
| Age           | 22 | Questions the age of the animal and its life   | How old is the rabbit? (6)  | NA  |



|                       |    |   |   |  |
|-----------------------|----|---|---|--|
|                       |    | span  | How long would it live? (9)   |  |
| Species               | 10 | Seeks to classify the animal within the appropriate species   | What type of rabbit it is? (8)<br>Is it a rabbit or a hare? (adult)   | Why does that [skeleton] look like a dinosaur but it's not? (6)    |
| Provenance            | 8  | Enquires where the animal has come from   | Where did you get this from? (8)  | How was it acquired? (adult)                                       |
| Real                  | 7  | Asks whether the animal is authentic or not   | Is it a real rabbit? (6)  | Why's it not real? (4)   |
| Physiological Process | 6  | Concerns the nature of internal biological processes of the animal, or external behavioural characteristics | How fast can a rabbit's heart beat at a maximum? (9)<br>What do rabbits eat? (5)<br>How fast can they go? (8) | How do rabbits eat? (5)<br>Why do rabbits hop so much? (6)         |
| Other                 | 6  | Miscellaneous – questions that could not otherwise be categorised   | Which one would you choose to have at home? (8)   | Why do museums have lots of stuff? (5)<br>How did you make it? (9) |
| Alive/Dead            | 3  | Seeks information about its current or former status as living or dead or the nature of its death           | Was it dead already? (adult)<br>Was it actually alive? (8)  | What were the circumstances in which it died? (adult)              |

Participants sought explanations most often with regard to features (63%), and the second most common explanations were sought for physiological processes and species (each 7%) (see Figure 4). In addition, participants sought facts most often about features (27%), followed by facts about age (32%), then facts about species, provenance, and real (11%, 10%, and 10% respectively).

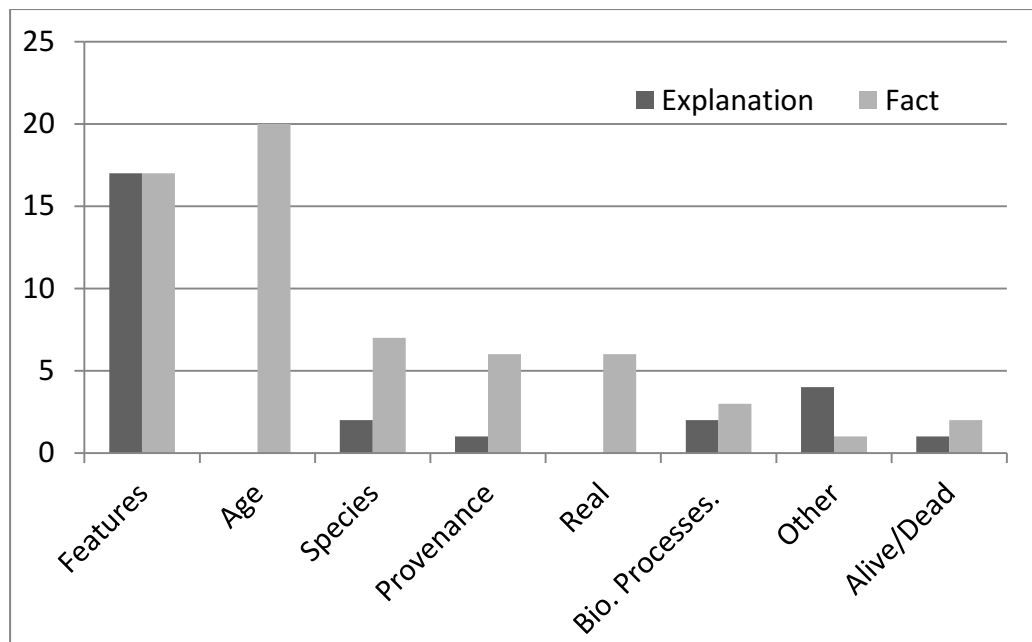


Figure 4: Number of explanation and fact questions according to the category of question

### Effects of age on participants' responses

Finally, participants' questions were explored to determine whether the patterns found in the data were affected by age. There was a general increase with age in relation to the number of participants who asked a question, with only 25% (9) of 4-5-year-olds asking a question compared to 53% (24) of 6-7-year-olds, 62% (37) of 8-10-year-olds and 61% (19) of adults. In addition, the number of participants who judged the rabbits as authentic generally increased with age, from 61% (22) of 4-5-year-olds to 80% (36) of 6-7-year-olds, 55% (33) of 8-10-year-olds, and 91% (30) of adults.

As expected, more participants asked a question following a judgment of authenticity compared to a judgment of inauthenticity in all age groups (see Figure 5), however, the youngest group of 4-5-year-olds asked relatively few questions compared to the older groups. Similarly, the hypothesis that more explanation questions would follow judgments of authenticity than judgments of inauthenticity was supported in each age group (4-5-year-olds 3 vs 2 respectively; 6-7-year-olds 11 vs 2; 8-10-year-olds 3 vs 1; adults 5 vs 0).

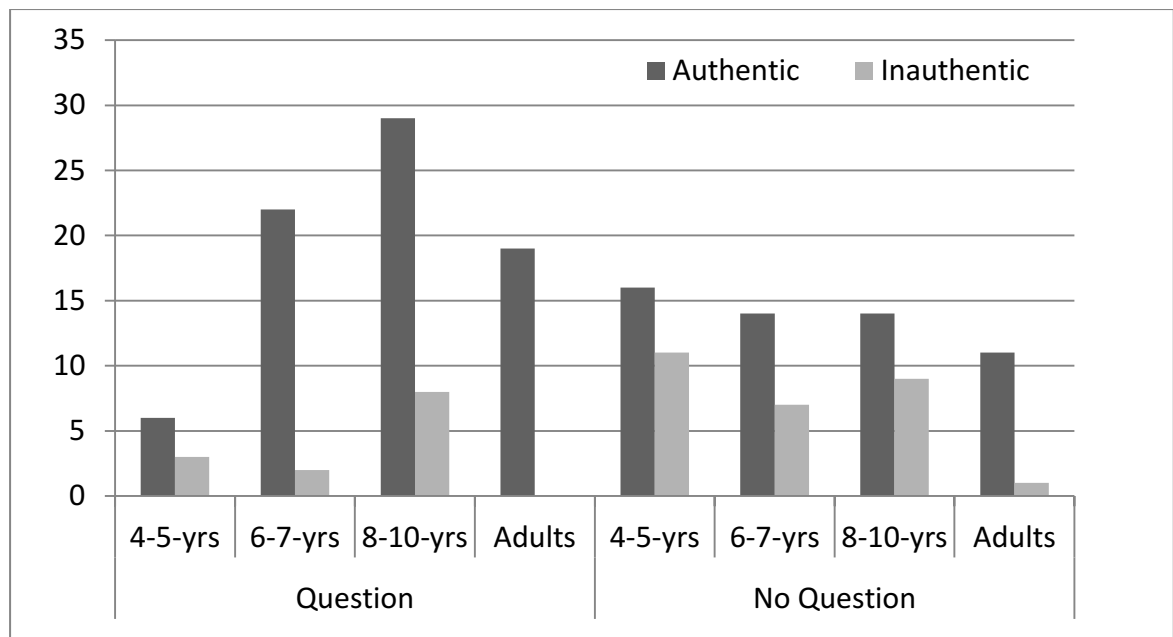


Figure 5: Number of participants who asked a question according to judgment of authenticity and age group

### Putting the findings into theory and practice

This research provides initial evidence to support the widely held belief among museum professionals that authentic objects, as opposed to replicas or imitations, promote curiosity and engagement. The study revealed that museum biofacts that are perceived as authentic, regardless of their actual authenticity, promoted curiosity and engagement. Specifically, more participants who perceived a taxidermied rabbit or rabbit skeleton as authentic asked a question than those who did not perceive it as authentic. Also, more explanatory or “why” questions were asked following a judgment of authenticity than inauthenticity. Furthermore when the taxidermied rabbit was presented alongside a soft toy (inauthentic) rabbit, more participants perceived the taxidermied rabbit as authentic and asked a question compared to when it was presented alone. In contrast, all participants correctly perceived the toy as not authentic and only 3 participants asked a question about it, thus further supporting the predicted link between authentic objects and curiosity.

An important issue to consider is what factors may influence whether or not visitors perceive museum biofacts as authentic. One factor may be type of animal. The current

study asked visitors about a rabbit, a common everyday British animal. Owing to its familiarity, this may have made it relatively easy for visitors to confer authenticity. It is not clear, however, to what extent these findings apply to different types of animals that are not part of our everyday experience, such as those from other countries or those that are extinct, e.g., dinosaurs. Dinosaur skeletons and fossils are prominent in natural history museums, but they are sometimes accompanied by model replicas, such as a life-size head of a T-Rex<sup>14</sup>. This combination of the real alongside replicas may have a positive effect on perceptions of authenticity, as was found in the current study when the taxidermied rabbit was presented alongside a soft toy rabbit. However, the main reason why this contrast was successful was because young children have a robust understanding that toys are pretend. At present, it is not clear whether children interpret models, such as a life-size model head, as replicas or as something that is real. This would clearly not be what museums intend.

As revealed by the current study, it is not object authenticity per se but visitors' perception of authenticity that was associated with increased curiosity and engagement. Does this mean that it does not matter if visitors think they are viewing the real thing when they are not? I recall being awed when I was a child at seeing "Dippy" (a cast of a skeleton of a diplodocus) in the entrance hall at the Natural History Museum in London, thus I felt somewhat cheated to discover recently that it was a cast. It is likely that other visitors will also have assumed that it was "real", unless they read the label<sup>15</sup>. Conversely, in other situations, it is possible that visitors may think that they are seeing a model when it is actually the real thing. Despite museums providing this information it is important that visitors know when they are interacting with the authentic and when they are not - if they appreciate the intention behind models or replicas, these can be as beneficial for engagement as interacting with the real thing<sup>16</sup>. It is clear that more research is needed to understand the various interpretations that museum visitors have about objects on display in a museum in relation to authenticity and its effects on engagement.

Another issue that may influence visitors' perceptions of authenticity is the presentation or context. Museums are moving away from the notion that authentic objects speak for themselves in a process of one-way communication from object to visitor, and are moving towards an object-based discourse in which meaning is created by integrating the object, the presentation and the visitor<sup>17</sup>. Notable ways in which presentation context can

be manipulated in museums of natural history is though having the biofact either as a touchable or behind glass. In the current study, there were no notable differences in the findings as a result of being able to touch the taxidermy and not being able to touch it as a result of being inside an exhibitoin case. It seems likely, however, that the ability to touch the animal would provide a qualitatively different (more interactive) experience than simply looking at the animal behind glass.

Another way in which presentation context can be manipulated is through presenting either single specimens or specimens as part of a diorama. In a diorama, an animal is portrayed as it would look in its natural habitat, perhaps in the presence of other appropriate animals. There may be more clues to authenticity in dioramas because the animal is presented in a meaningful context. Further research could explore the impact of presentation on perceptions of authenticity and engagement.

The data also have implications for the type of information that museum professionals provide on exhibit labels. First, when something is “real” it could be explicitly labelled as such, rather than this fact being inferred as a result of other information (e.g. who found it and when). Second, information about predominant features of the animals and how old they are were common questions asked in this study, suggesting that this information is of interest to visitors. Slightly older children and adults were also interested in provenance and species information. These data confirm that this type of information, which regularly appears on museum labels, is of interest to visitors and may promote understanding of authenticity and engagement.

In summary, this research provides much needed evidence about the effects of museum object authenticity on visitors’ level of curiosity and engagement. It offers support for the widely held belief among museum professionals that authentic objects provide visitors with an engaging experience that promotes their curiosity. The results of this investigation call for museum professionals to help visitors understand and appreciate the authenticity of museum objects, and to give authentic objects prominence in their collections.

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## Notes

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<sup>1</sup> Roberts, *From knowledge to narrative*; Evans, Mull and Poling, "The authentic object? A child's-eye view", 64

<sup>2</sup> Eberbach & Crowley, "From living to virtual: Learning from museum objects", 318

<sup>3</sup> Watson and Werb, "One Hundred Strong: A Colloquium", 255-265

<sup>4</sup> Hampp and Schwan, "Perception and evaluation of authentic objects" 349-351; Leinhardt and Crowley, "Objects of learning, objects of talk", 301-324

<sup>5</sup> Kirchberg and Tröndle, "Experiencing exhibitions: A review of studies on visitor experiences in museums", 435-450; Roberts, *From knowledge to narrative*

<sup>6</sup> Hickling and Wellman, "The emergence of children's causal explanations and theories", 679-681

<sup>7</sup> Greif, Kemler Nelson, Keil and Gutierrez, "What do children want to know about animals and artifacts?" 155-59

<sup>8</sup> Frazier, Gelman and Wellman, "Preschoolers' search for explanatory information within adult-child conversation", 1592-1610; Callanan and Oakes, "Preschoolers' questions and parents' explanations", 213-233

<sup>9</sup> This was also the method used in Hampp and Schwan "The role of authentic objects in a museum of the history of science and technology" 5-8

<sup>10</sup> Bunce and Harris, "'He hasn't got the real toolkit!' Young children's reasoning about real/not-real status", 1501-1503

<sup>11</sup> Bunce, "Dead ringer? Visitors' understanding of the authenticity of museum taxidermy", in press; Bunce, "Still life? Children's understanding of museum taxidermy", (under review)

<sup>12</sup> Example reasons why participants said that the rabbit was authentic are: "It's got real fur and real actual ears" (5-year-old); "It doesn't feel like plastic, it feels real" (6-year-old); "It is real bones" (6-year-old); "The fur feels like a real one and it looks real" (8-year-old); "You won't be able to make bones like that" (8-year-old); "It looks real rather than man made ... it just looks authentic" (Adult).

<sup>13</sup> A chi square test revealed that the association between judgments of authenticity and asking a question was significant,  $p < .001$

<sup>14</sup> For example, there is one of these at the Oxford University Museum of Natural History

<sup>15</sup> This is perhaps one of the reasons why the current museum director wants to replace Dippy, a fake, with an authentic skeleton of a blue whale <http://www.bbc.co.uk/news/science-environment-31025229> accessed 12th May 2016

<sup>16</sup> Hampp and Schwan, "The role of authentic objects in museums of the history of science and technology", 170-180

<sup>17</sup> Evans, Mull and Poling, "The authentic object? A child's-eye view", 57-60